

**Notice of Allowability**

Application No.

10/632,622

Applicant(s)

SHROWTY ET AL.

Examiner

Leigh Marie Garbowski

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to papers filed through 07/31/2003.
2. ☒ The allowed claim(s) is/are 1-37.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 07/31/2003
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### **EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The application has been amended as follows:

#### **CLAIM 35**

"value" [line 7] was changed to --factor-- to clarify antecedent basis.

#### **CLAIM 36**

--adjacent-- was inserted before "clock" [line 2] to clarify antecedent basis.

#### **CLAIM 37**

"26" [line 1] was changed to --36-- to clarify dependency.

#### ***Allowable Subject Matter***

Claims 1-37 are allowed.

The following is an examiner's statement of reasons for allowance: Smith et al. [U.S. Patent Application Publication #2003/0229479 A1] disclose the most pertinent prior art for inserting dummy metal into a circuit design including a plurality of objects and clock nets. Regarding independent claims 1 and 18, Smith et al. disclose identifying free spaces on each layer of the circuit design suitable for dummy metal insertion as dummy regions [figure 7, element 34-2; paragraphs 0023, 0108, 0151, 1052] and prioritizing the dummy regions [figure 18, element 34-2-4; paragraphs 0092, 0108-0114, 0123, 0127, 0155-0162, 1079, 0189]. However, Smith et al. do not prioritize such that the dummy regions located adjacent to clock nets are filled with the dummy metal last. Smith et al. prioritize based on degree of variation, which does include parameters that impact timing, yet, this scheme merely processes through a grid; there is no teaching in Smith et al. to disclose or suggest that the dummy regions located adjacent to clock nets are filled with dummy metal last. Oh [U.S. Patent #6,751,785 B1] discloses inserting dummy metal into a circuit design including a plurality of objects and clock nets, including identifying critical, or clock, nets [column 2, lines 45-46; column 3, lines 40-44; column 5, lines 4-11; column 7, lines 1-7]. However, Oh teaches away from

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the invention by employing an exclusion zone. Furthermore, although Oh provides motivation for combining with the Smith et al. reference to determine clock nets and subsequently use any suitable dummy fill method [column 3, lines 44-54; column 7, lines 18-28], such a combination would not result in prioritizing the dummy regions such that the dummy regions located adjacent to clock nets are filled with the dummy metal last. Regarding independent claim 35, similar reasoning as remarked above follows that the prior art of record, neither alone nor in combination, would not result in inserting dummy metal into the sorted dummy regions such that the dummy regions located adjacent to increasingly wider clock nets are filled last.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

The prior art made of record and not mentioned above is also considered pertinent to applicant's disclosure. Ozawa et al. [U.S. Patent #6,815,811 B2] disclose ordering dummy patterns in terms of size [column 4, lines 30-36] and an embodiment that generates a clock tree [figure 23]. However, Ozawa et al. teach away from the invention by employing prohibited areas. Matumoto et al. [U.S. Patent Application Publication #2003/0204832 A1] disclose setting priorities for dummy patterns based on size [paragraph 0016, 0054]. Takechi et al. [U.S. Patent Application Publication #2003/0177464 A1] disclose generating dummy patterns and correcting the delay value of a wiring path [paragraphs 0010-0011, 0026].

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leigh Marie Garbowski whose telephone number is 571-272-1893. The examiner can normally be reached on days.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'LMG', is positioned above the printed name and title.

**LEIGH M. GARBOWSKI**  
**PRIMARY EXAMINER**